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ABSTRACT

This document is an annotated, selected bibliography on competency-based education. Items include books, book chapters, journal articles, conference papers, and ERIC documents, totaling 29 entries in all. The dates on the bulk of materials range from 1974 through 1977; however, a few older items are included. Materials deal with testing, instruction, student learning evaluation, curriculum development, unit mastery learning, small group contingency management as opposed to personalized instruction and lectures, nursing education, leadership, professional competencies, and student and faculty attitudes. (TR)

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COMPETENCY-BASED EDUCATION:

A SELECTED ANNOTATED BIBLIOGRAPHY

Prepared by:
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For the Faculty and Staff of:

ST. MARY'S JUNIOR COLLEGE
Minneapolis, Minnesota
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JC 780 148

Airasian, P. W. and Madaus, G. F.
"Criterion-Referenced Testing in the Classroom"
Crucial Issues in Testing, Ralph W. Tyler and Richard M. Wolf (eds.)
Berkeley: McCutchen Publishing Corp., 1974

The authors look at the history and some of the issues of criterion-referenced testing as apposed to norm-referenced testing. An example of a mathematics goal card is presented to illustrate the differences. Three steps in the implementation of criterion-referenced measurement are discussed: (1) develop, prior to instruction, a list of objectives which identify the performance, skills and products which instruction is designed to help students attain; (2) determine what standards will be used to judge whether a student's performance or product indicates mastery of the instructional objectives; (3) devise situations which allow the students a chance to exhibit the desired skill, behavior or product.

Association of Classroom Teachers of the National Education Association
"Performance-Based Instruction"
Today's Education, Vol. 61 (4), April 1972, pp 33-40

This article is a report summarizing the proceedings of the Classroom Teachers National Study Conference in 1971. The participants worked in small groups to explore the terms and concepts of performance-based education. The paper consists of three sections: (1) a summary of the introductory statement by Dean Howsan, (2) a pre'cis of eight major issues identified by the conference participants, and (3) an outline of the next steps to be taken by the conference participants. This report uses the terms performance-based and competency-based interchangably. Dean Howsan's statement explains the concepts of enhancers, enablers, modules, and distinguishes between traditional methods and performance-based instruction. He offers eleven specific suggestions and describes five major objectives for teachers who would like to try PBI in their classroom.

Bloom, B. S.; Hastings, J. T. and Madaus, G. F.
Handbook on Formative and Summative Evaluation of Student Learning
New York: McGraw-Hill Inc., 1971

This book is about the "state of the art" of evaluating student learning. It is designed to be used as a reference manual by teachers who encounter various evaluation problems throughout the academic year. It describes in detail the ways in which behavioral objectives may be used to improve teaching and maximize student learning. Models, guidelines and examples are presented for constructing valid evaluation instruments for the different types of educational objectives. Suggestions for reducing the teacher's work load and time spent in evaluation are also presented. In addition, the authors consider some of the major new developments taking place in evaluation.

Broski, D., et al
"Competency-Based Curriculum Development: A Pragmatic Approach"
Journal of Allied Health, 6 (1): 38-44, Winter 1977

The writers define a competency-based curriculum as, "a purposefully provided vehicle for insuring that learners possess predetermined professional attributes." Eight elements of a competency-based curriculum are identified, and a model is presented for developing competency statements in any allied medical speciality. A 4x4x4 matrix is provided to illustrate a conceptual frame of reference which reflects four roles, four functions and four contexts in which allied health practitioners perform. When the authors began developing competency statements, they encountered six problems which enabled them to identify eight management principles to serve as guides for future efforts of this kind. The problems and associated management principles are:

I. Time - An individual's productivity in a developmental process is positively related to the absence of external responsibilities.
II. Communication - Productivity in a developmental process is positively related to the degree of communication integration.
III. Resources - The ability to transfer concepts from one educational setting to another minimizes reinventing the wheel.
IV. Getting started - Knowing your ultimate goal, you begin at the lowest approximation of your objectives and determine reasonable successive approximations with deadlines and people assigned to meet them.
V. Getting Faculty Involved - Faculty member acceptance of a collective innovation decision is positively related to the degree of participation of members of the social system in the decision; and project managers' success is positively related to their credibility in the eyes of the faculty, and; an innovation is more readily adopted if it is:
    1) perceived as a better idea than the idea it supercedes,
    2) consistent with existing values,
    3) easily understood,
    4) capable of being experimented with on a limited basis, and
    5) capable of producing results which are visible to others.
VI. Identifying Competencies and Writing Objectives - Progress often proceeds from both ends toward the middle.

In conclusion, the article specifies that a competency-based curriculum is visible, accountable, revisable and transferable.

Carlson, J. G. and Minke, K. A.
"Fixed and Ascending Criteria for Unit Mastery Learning"
Journal of Educational Psychology, 1975, Vol. 67 (1), 96-101

One of the major arguments against CBI and mastery learning is reflected by the large number of students who withdraw and/or fail during early stages of the course - often three times as many as conventional courses. The authors hypothesized that a lowered passing criterion on initial quizzes would provide more immediate reinforcement, and thereby be more favorable to successful completion of future quizzes. This article describes the experiment that the authors conducted at the University of Hawaii to confirm their hypothesis. They found that students using an ascending criterion (60-90 percent) performed better than either a fixed 80 percent or a fixed 90 percent criterion. The results were discussed in terms of a "shaping" phenomenon achieved by gradually approximating high levels of performance (mastery).

Coldeway, D. B., et. al.
"Comparison of Small Group Contingency Management with the Personalized System of Instruction and the Lecture System."
Paper presented at the Conference on Research & Technology in College Teaching, October 1974

This paper describes an experiment the authors conducted to investigate a system of instruction that would increase student interaction, reduce the number of staff needed to run a course, and reduce the time needed to run the course, while still producing effectiveness levels comparable to already established Keller courses. Eighty-nine introductory psychology students were randomly assigned to one of three groups: (1) The first group of 24 students was subdivided into eight groups of three students. Each of these subgroups was responsible for the progress of its members and 90 percent mastery was required by each of its members before the subgroup could progress on to the next unit. If one student did not achieve mastery, the other two members of the group were responsible for helping that member and administering an equivalent form of the examination. (2) The second group of students were given a Keller type course of personalized self-instruction (PSI). Students in this group were told that any units not finished by the end of the quarter would lower their grade. (3) The third group consisted of students who were part of a larger lecture course which met for three days a week. Two mid-term examinations were administered to this group during the quarter. On a final examination, no differences were found between the small group system and the Keller type system; however, both groups performed better than the lecture group and rated the course more favorably. A very promising finding of this study was a zero level withdrawal rate from the small group system, while the Keller type system experienced over a 20 percent withdrawal rate.

Corcoran, Thomas B.
"Prospects and Problems of Competency-Based Education"
Renewing Higher Education: The Competency-Based Approach, Peterson, V.T. (ed.)
Center for the Study of Higher Education, University of Toledo, 1976

The author describes his experiences which led to his involvement with the Fund for the Improvement of Postsecondary Education and competency-based education. Seven potential benefits of competency-based education are pointed out: (1) it establishes standards for credentialing; (2) it increases the productivity of educational institutions; (3) it expands the choices available to students; (4) it improves access to credentials; (5) it enhances institutional quality; (6) it reduces competition; and (7) it insures a close relationship between credentials and job roles. The article also discusses developmental costs and time, the cost of assessment, and faculty time.

Davis, J. R.
Teaching Strategies for the College Classroom
Boulder, Colo: Westview Press, Inc., 1976

The author describes four teaching "strategies" for the college instructor. The first "strategy" involves employing instructional systems. A general overview is presented for behavioral learning theory, reinforcement and shaping, defining behavioral objectives, self-paced instructional systems, programmed learning, computer-assisted instruction (CAI), and mastery learning. The second strategy describes a Gestalt approach involving cognitive psychology. The third strategy is involved with facilitating inquiry, and the final strategy discusses utilizing group processes to maximize learning.

Dobbert, D. J., et. al.
"Short Answers to Frequent Questions about Competency-Based Curriculum: A Working Paper."
ERIC Document ED 124 039; Jan, 5, 1976

This short working paper attempts to answer twenty-one frequently asked questions about competency-based curriculum. Some of the topics discussed are: identifying and defining competencies, characteristics and design of a competency-based curriculum, assessment procedures, instructional strategies, and allowing for content evaluation and change.

Dubin, Robert and Taveggia, Thomas C.
The Teaching-Learning Paradox: A Comparative Analysis of College Teaching Methods
Center for the Advanced Study of Educational Administration, University of Oregon, Eugene: 1968

The authors examined 91 comparative studies of college teaching technologies conducted between 1924 and 1965. The studies looked at many methodologies, such as traditional lectures, supervised and unsupervised independent study, small groups, and discussion methods. A summative analysis of all these studies revealed that no measurable differences exist between the different methods of instruction when evaluated by student performance on final examinations. In light of their findings, the authors suggest that future research efforts should concentrate on the factor(s) which the various teaching technologies have in common (such as the use of a textbook), and then attempt to control these variables. Additionally, it is suggested that cost effectiveness should be the primary consideration when different teaching methods produce equal effectiveness levels.

Franklin, T. E., et. al.
"An Analysis of Learning Efficiency by Three Reading Modes in Individualized Instruction"
Paper presented at the Annual Meeting of the American Education Research Association, April 1974 ED 095 509

There is much controversy over the type of instructional material that would be most beneficial to students in a CBE program. This study examined three modes of presenting material in a 90 percent criterion referenced educational psychology course. The three instructional modes were: (1) a linear, programmed reading format without illustrations, (2) a linear, programmed reading format with color illustrations, and (3) a non-programmed paragraph format. It was found that the time invested was the most accurate predictor of the amount of gain, regardless of the student's reading ability. Also, the linear programmed mode with illustrations forced students to spend more time with the material than the other modes, thereby helping them to achieve maximal gain and learning rate.

Gallagher, P. D. and Gay, L. R.
"The Comparative Effectiveness of Tests Versus Written Exercises in a Competency Based Research Course"
Paper presented at the annual meeting of the American Educational Research Association, April 1976 ED 121 810

The competency-based education approach often de-emphasizes written tests as a method of evaluating students. This paper describes an experiment conducted by the authors to determine whether written tests or written exercises on the same concepts would lead to greater retention and better performance on a final examination. Subjects were 126 masters level student randomly assigned to one of three conditions. The criteria level for tests and written exercises was 100 percent, and students repeated tests and exercises as many times as necessary for mastery. On a surprise final examination, those students who had been required to reach criterion on each of a series of tests exhibited significantly greater retention of the tested concepts and procedures than the students who had been required to complete written exercises on the same concepts. The results suggest that the elimination of formal, written tests may be counterproductive to the retention of learned concepts.

Griffin, J. K.
Writing and Using Behavioral Objectives in Nursing Education
New York: National League for Nursing, (Pub. No. 23-1670), 1977

In this short booklet, Dr. Griffin describes two spheres of intellectual activity in relation to behavioral objectives for nurses. First, the philosophical beliefs about what nursing should be, and second, the translations of these beliefs into clear, communicative language. Seven components of a behaviorally-stated objective are identified, including: (1) the objective is learner centered, (2) the student will engage in a directly observable behavior, (3) the essential characteristics of acceptable performance are described, (4) students are able to report what the objectives are, (5) the conditions under which the behavior will occur are described, (6) an active verb is used in describing the behavior, and (7) the means of evaluation are implicit within the objective statement. The need for specificity in developing objectives is discussed.

Hall, G. E. and Jones, H. L.
Competency-Based Education: A Process for the Improvement of Education
Prentice-Hall, Inc., Englewood Cliffs, NJ: 1976

This book provides an in-depth look at the issues, theory, implementation and practice of competency-based education. It is regarded as a process for change rather than a prepackaged program or kit. A scheme is presented to assist in the development and adoption of a competency-based program. Some of the academic issues discussed include identifying competencies, goals and objectives, evaluating performance, developing modules, utilizing resources, enhancing personalization and feedback, sequencing instruction, and teacher-student interactions and roles. Several examples of existing competency-based programs and management systems are presented. A chapter written by a student who enrolled in a competency-based education program is also included.

Harlacher, Ervin L.
"Competency-Based Learning Systems"
Paper Presented at Research Academy, Kansas City, Missouri, May 29, 1974
ED 097 087

The author lucidly describes the educational assumptions that led to the development of an innovative competency-based learning system at Brookdale Community College in New Jersey. The program developed out of the basic philosophy that the role of education is to meet the individual needs of students by providing a wide diversification of learning methods and materials that would accommodate a wide variety of learning styles and personality differences. Thus, the student assumes responsibility for his/her own learning and for meeting pre-established program competencies.

Jones, Harry
"Competency-Based Education: The Emerging Center of Leadership"
Texas Southern University, Austin: 1975

The author of this paper believes that competency-based education represents a productive direction for education in the context of rapid environmental change. The view is expressed that "future shock" will change the role of teaching. It will become primarily a rationale for getting together for the "higher purpose of relationship," and secondarily as a means of communicating skills and information. This paper recommends: that the curriculum will need to be drastically revised in order to eliminate wasted time, effort or subjects; the concept of graduation will need to be de-emphasized; that continuing education will be a necessity for almost everyone and will need to be converted to a 24-hour, seven-day-a-week basis; that the curriculum will need to be molded to meet the needs of the individual. Competency-based education is presented as a way of meeting our nation's future educational needs.

Kennedy, Daniel A.
"Some Impressions on Competency-Based Training Programs"
Counselor Education & Supervision, June 1976

This article examines what is meant by a competency-based training program and gives a general description of the differences between cognitive goals and performance goals. Problems in assessing student competencies are discussed, including reliability and variations of testing and grading. Student attitudes toward the performance based approach are reported as highly favorable; however, the author cautions against overemphasizing the objectives and trying to accomplish them too rapidly. It is pointed out that the ultimate criterion of a program's effectiveness must be stated in terms of what happens to the clients of those who have completed the training program.

Knott, Bob
"What is Competency-Based Curriculum in the Liberal Arts?"
Journal of Higher Education, 46 (1): 25-40, Jan/Feb, 1975

The author views liberal arts education as a process that develops specific identifiable human qualities that are integrated into an effective whole which is more than the sum of the parts. Four components of a competency-based liberal education are discussed: (1) an analytic epistemology of the patterns of human meaning (the Phenix scheme, consisting of six modes of understanding is suggested. These six modes are: symbolic communication, science, aesthetics, personal knowledge, ethics and synoptic knowledge); (2) a special area of advanced expertise; (3) a developmental scheme (the Chickering model is presented for developing seven competencies in the affective domain: developing confidence, managing emotions, developing autonomy, establishing identity, freeing interpersonal relationships, developing purpose, and developing integrity.); (4) a list of institutional values that the college deems important, but finds inadvisable to impose directly on students. These values may vary greatly from one college to another.

Knott, Robert E.
"Organizing the Competency-Based Curriculum"
Renewing Higher Education: The Competency-Based Approach, Peterson, V. T. (ed.)
Center for the Study of Higher Education, University of Toledo, 1976

The writer discusses the development and implementation of a competency-based education program at Mars Hill College. Six general competencies for a liberal arts education and their modes of assessment are presented. Additional areas analyzed include faculty time considerations, enrichment of student learning beyond minimum competency levels, and essential support systems.

Lawrence, Gordon
"Delineating and Measuring Professional Competencies"
Educational Leadership, 31: 298-302, Jan. 1974

This article specifically pertains to performance-based teacher education, however, the major points that the author elucidates are important to any competency-based education program. The primary issue discussed is the importance of describing criteria used to choose competencies, and how these particular criterion were chosen. Lawrence notes that a major drawback of using a consensus process to identify competencies is that it often results in competencies which are vaguely stated and abstract in nature. That is, competency statements derived by consensus are not sound substitutes for competencies drawn from a theory base. Frequent problems of modules are discussed, including inconsistencies between competency statements and measurement procedures. The need for low-inference measuring instruments is stressed. Finally, the author suggests the information that should be included in students' competency portfolios.

Leuba, R. J.
"Individualized Instruction and the Letter Grade"
Paper presented at the National Conference on Behavioral Research and Technology in Higher Education. Atlanta, Georgia, November 14-16, 1974 ED 100 308

The author explores the interface between individualized instruction (II) and letter grades. II is operationally defined in a three part definition: (1) II is self-paced, (2) it keeps company with both the reinforcement theory of learning and with instructional objectives, and (3) it embraces mastery principles. Traditional grading systems are explained as a way of ranking students. Also, the external pressures that are put on teachers to rank (grade) students, and the ultimate incompatibility of grading with II are discussed. An argument is made for separating the credentialing role from the teaching environment.

Litwin, James L.
"Notes on the Impact of Students of a Competency-Based Framework"
Renewing Higher Education: The Competency-Based Approach, Peterson, V. T. (ed.)
Center for the Study of Higher Education, University of Toledo, 1976

This article examines the framework and characteristics of competency-based education from the student's perspective. Eight essential characteristics of a competency-based framework are identified. Competency-based education: (1) is time-free, (2) is space-free, (3) offers individual choices of learning activities, (4) provides for personalized instruction, (5) states explicit objectives, (6) relies on self-evaluation for readiness to test, (7) is designed for self-directed learning, and (8) incompasses multiple modes of evaluation. Several problems that students have experienced within the competency-based framework are pointed out. For example, learning is too unstructured, there is a lack of interaction with other students, time budgeting and study habits must be changed, there is a tendency to procrastinate and defer completion of work, and there is not enough guidance provided on how the program works. In addition to the problems, several benefits were expressed by students. These included individualization, opportunity to know the faculty and receive individual tutoring, not having to attend boring classes and regurgitate material, practice in oral communication of ideas, and a greater flexibility in personal scheduling. The author also identifies seven expected outcomes of students operating within a competency-based framework and suggests possible directions for future research.

McDonald, Frederick J.
"Assessing Competence and Competency-Based Curricula"
Renewing Higher Education: The Competency-Based Approach, Peterson, V. T. (ed.)
Center for the Study of Higher Education, University of Toledo, 1976

This paper stresses the need to define competence within the context of the situation in which performance will occur. A dichotomy is drawn between true behaviorist theory and the competency-based education movement. It is suggested that models of competent behavior must be present in order to produce competent behavior by students.

Mentkowski, M. M.
"Effect of a Competency-Based Instructional System on Student and Faculty Attitudes"
Renewing Higher Education: The Competency-Based Approach, Peterson V. T. (ed.)
Center for the Study of Higher Education, University of Toledo, 1976

This article points out that because competency-based education is relatively new, it has the potential to create as many problems for students and instructors as it attempts to solve. Many of the attitudes and problems that students and instructors encounter within the competency-based format are presented and discussed in detail. The author urges the necessity of getting objective and systematic data from students about the program in order to identify specific concerns and problems. This data can than be used to guide the faculty in the revision of objectives and criteria. Four recommendations are offered for reducing negative attitudes towards the competency-based format. Instructors should: (1) provide for greater individual recognition by providing more individual instruction; (2) improve the evaluation system by including the affective domain; (3) utilize a systematic data gathering system to monitor student and faculty attitudes toward the program; and (4) promote a continuing effort to make the curriculum public. In conclusion, the author stresses the need for student and faculty commitment.

Pearson, Betty D.
"A Model for Clinical Evaluation"
Nursing Outlook, 23(4): 232-5, April-1975

This article describes three types of educational objectives based on Eisner's model of evaluation: instructional objectives (which describe how students will perform after instruction), expressive objectives (which are designed to help the students develop their own cognitive and affective skills), and Type III objectives (which are designed to help students use their creative problem-solving abilities when there is a wide variety of solutions to a problem). Additionally, four types of learning outcomes are identified and discussed. These are: content specific, model specific, learner specific, and patient specific outcomes. In conclusion, the author proposes an evaluation model to help in the grading of clinical courses.

Criterion-Referenced Measurement: An Introduction, Popham, W.J. (ed.) Englewood Cliffs, N. J.: Educational Technology Publications, Inc., 1971

This text consists of a series of articles that contain the basic concepts of criterion-referenced measurement and evaluation. The variability of test scores is pointed out as the core difference between norm-referenced and criterion-referenced grading. Reliability, validity and item analysis are discussed, including a review of teacher considerations when constructing test items. Two types of criterion-referenced grading systems are presented: the "on-off" approach and the differential criterion. With respect to the later, graduations in reporting are only a function of the alternative courses of action available to the student after measurement has been made. Guidelines for determining the applicability of criterion-referenced measurement and for setting appropriate passing competence levels are discussed. The final article recommends a general approach for assessing the quality of instruction by developing an empirically-based index of defective criterion.

Roueche, J. E., et. al.
Time as the Variable, Achievement as the Constant: Competency-Based Instruction in the Community College. "Horizons Issues" Monograph Series
American Association of Junior and Community Colleges, 1976

This report discusses the potential of competency-based education in community colleges to meet the nations political, social, economic and cultural needs. Eight characteristics of the competency-based format are presented and a five-phase plan for instructional decisions is proposed. Topics discussed include the development of objectives, the preparation and presentation of instruction, evaluation, and validation. A distinction is made between the underlying assumptions of traditional education and competency-based instruction. Student and faculty roles are also discussed. The concluding chapter looks at the benefits of mastery learning, meeting the needs of continuing education and a model of educational accountability.

Turney, M., et. al.
"Competency-Based Education: What is it?"
Report to the Vice Chancellor by a Task Force appointed by Faculty Senate
University of Wisconsin, Stout; November, 1974

The terms "competency-based" and "performance-based" are often used interchangably. This task force report examines what is meant by competency-based education and contrasts it to performance-based education. "Competency" is operationally defined as, "having requisite abilities or qualities to specified minimum proficiency levels." Inherent in this definition are the implications that: (1) instruction is individualized to a considerable extent; (2) learning experiences are guided by feedback; and (3) the program as a whole has the characteristics of a system. Several current issues and problems confronting the CBE movement are presented.

Woditsch, Gary A.
"Jonathan Livingston Student: Competence for What?"
Renewing Higher Education: The Competency-Based Approach, Peterson, V. T. (ed.)
Center for the Study of Higher Education, University of Toledo, 1976

This paper looks at the ways in which competency-based education can embrace and focus on man's higher order skills, such as the development of critical thinking skills, communication skills, problem solving skills, information processing skills, and value clarification skills. Although traditional education also seeks to develop these skills, the competency-based approach places emphasis on specifying learning outcomes, thus enabling the instructor to evaluate his or her approach in an empirical manner while still preserving the individuality of the students.

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